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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,108	01/10/2001	Christopher R. Dance	D/A0967	7643
25453	7590	12/08/2004	EXAMINER	
PATENT DOCUMENTATION CENTER XEROX CORPORATION 100 CLINTON AVE., SOUTH, XEROX SQUARE, 20TH FLOOR ROCHESTER, NY 14644			SIANGCHIN, KEVIN	
			ART UNIT	PAPER NUMBER
			2623	

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Advisory Action</b>	<b>Application No.</b> 09/681,108	<b>Applicant(s)</b> DANCE, CHRISTOPHER R.	
	<b>Examiner</b> Kevin Siangchin	<b>Art Unit</b> 2623	

**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

THE REPLY FILED 03 November 2004 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

**PERIOD FOR REPLY [check either a) or b)]**

- a) ☐ The period for reply expires \_\_\_\_\_ months from the mailing date of the final rejection.
- b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on \_\_\_\_\_. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. ☐ The proposed amendment(s) will not be entered because:
- (a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);
  - (b) ☐ they raise the issue of new matter (see Note below);
  - (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
  - (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_.

3. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.
4. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
5. ☒ The a) ☐ affidavit, b) ☐ exhibit, or c) ☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.
6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
7. ☒ For purposes of Appeal, the proposed amendment(s) a) ☐ will not be entered or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: \_\_\_\_\_.

Claim(s) objected to: 23 and 25.

Claim(s) rejected: 2-5,7-9,12-15,17-22,24 and 26.

Claim(s) withdrawn from consideration: \_\_\_\_\_.


8. ☒ The drawing correction filed on 10 May 2004 is a) ☒ approved or b) ☐ disapproved by the Examiner.
9. ☐ Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_.
10. ☐ Other: \_\_\_\_\_

Continuation of 5. does NOT place the application in condition for allowance because: The Applicant's amendments address the informalities and non-compliance with U.S.C. § 112(2) noted in the Final Office Action (September 09, 2004). The amendments do not introduce substantive limitations into the claims. With regard to the Applicant's Remarks (03 November 2004), these have been fully considered, but are not considered persuasive. A full treatment of the Applicant's arguments will not be provided here. Two key points will be put forth in rebuttal to these arguments, followed by a brief synopsis of the combination of Adams ("Interactions Between Color Plane Interpolation and Other Image Processing Functions in Electronic Photography", SPIE Vol. 2416, July 1995) and Kirk (U.S. Patent 4,803,548).

The Applicant asserts that "[u]nlike the Applicant's invention recited in Claim 12 which records an image of sampled values output from a [CFA] where pixels in the image have a location at which a sampled value of one of a plurality of color channels is recorded ..., Kirk's method for enhancing a video image relies on samples of all three LIQ samples at each pixel location" (page 14 of the Amendment filed November 03, 2004). On the contrary, the assumption in Kirk is that the chromaticity (i.e. I and Q) is sampled at a lower resolution than the luminance (L). This observation notwithstanding, each pixel, as the Applicant points out, "has a value of L, I, and Q associated with it". The Applicant should realize that this is no different from the pixels of an image obtained from a CFA array. Each pixel of such an image stores a color from a given color space. Color spaces are typically multidimensional (e.g. RGB is three-dimensional, CMYK is four-dimensional, etc.). As such, members or colors of these spaces are actually multidimensional vectors consisting of a plurality of elements, each corresponding to one of the color space's constituent dimensions. In the case of the both the Applicant and Kirk, these vectors are incomplete per image pixel because the color space dimensions or color components are sampled at differing resolutions. Specifically, certain elements of the associated color vectors (i.e. certain color components of the pixels) are missing because they correspond to an undersampled dimension of the given color space. Again, in the case of both Kirk and the Applicant, certain dimensions (color components) of the color space are undersampled because they are perceptually less important than the other color space dimensions. See, for example, Kirk column 3, lines 4-10, 54-62 and column 4, lines 28-31. Notice there that Kirk even mentions that this sampling scheme is inherent to some detector arrays used in cameras. The crux of both the Applicant's and Kirk's methodologies is the restoration of these "missing" color components. The Applicant and Kirk both use linear regression to derive these missing color components.

The remainder of the Applicant's arguments ( paragraph 3 on page 14 of the Amendment filed November 03, 2004) attempt to illustrate differences between the Applicant's claimed invention and the combination of Kirk and Adams. While these observations may be valid and may indeed distinguish the Applicant's invention from the combination of Kirk and Adams, it is the Examiner's contention that these potentially distinguishing features are currently not claimed. These issues were, therefore, not considered in any of the previous rejections.

As shown in the previous Office Actions, Adams teaches CFA reconstruction primarily via interpolative methods. Kirk, on the other hand, teaches the reconstruction of a fully resolved color image using a linearly regressive technique. The two authors propose different methods for solving essentially the same problem. In combining the two teachings, Adams serves as the theoretical "backbone" for CFA reconstruction, while Kirk teaches the usage of linear regression for color reconstruction.

  
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